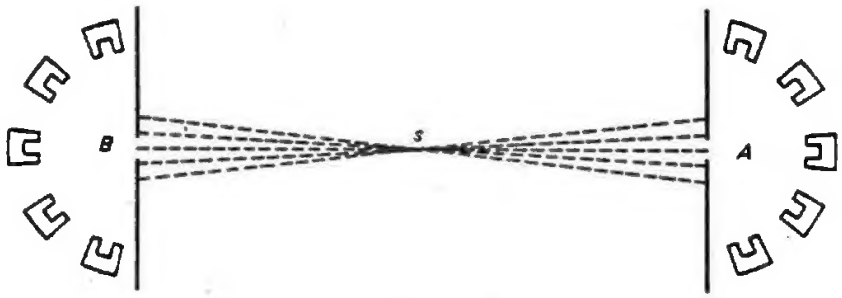

Figure 2

counted by Geiger counters. These counters are coincidence counters; that is to say they are so wired that they only count particles that have passed at the same time through A and B. This should make it almost certain that only pairs of particles which have interacted are recorded.

We now first test the Heisenberg scatter for both the beams of particles going to the right and to the left, by making the two slits A and B wider or narrower. If the slits are narrower, then counters should come into play which are higher up and lower down, seen from the slits. The coming into play of these counters is indicative of the wider scattering angles which go with a narrower slit, according to the Heisenberg relations.

Now we make the slit at A very small and the slit at B very wide.

According to the EPR argument, we have measured q_y for both particles (the one passing through A and the one passing through B) with the precision Δq_y of the slit at A, since we can now calculate the y-coordinate of the particle that passes through B with approximately the same precision, even though its slit is wide open.

We thus obtain fairly precise '*knowledge*' about the q_y position of this particle—we have 'measured' its y position indirectly. And since it is, according to the Copenhagen interpretation, our *knowledge* which is described by the theory—and especially by the Heisenberg relations—we should expect that the momentum p_y of the beam that passes through B scatters as much as that of the beam that passes through A, even though the slit at A is much narrower than the widely opened slit at B.

POPPER EXPERIMENT
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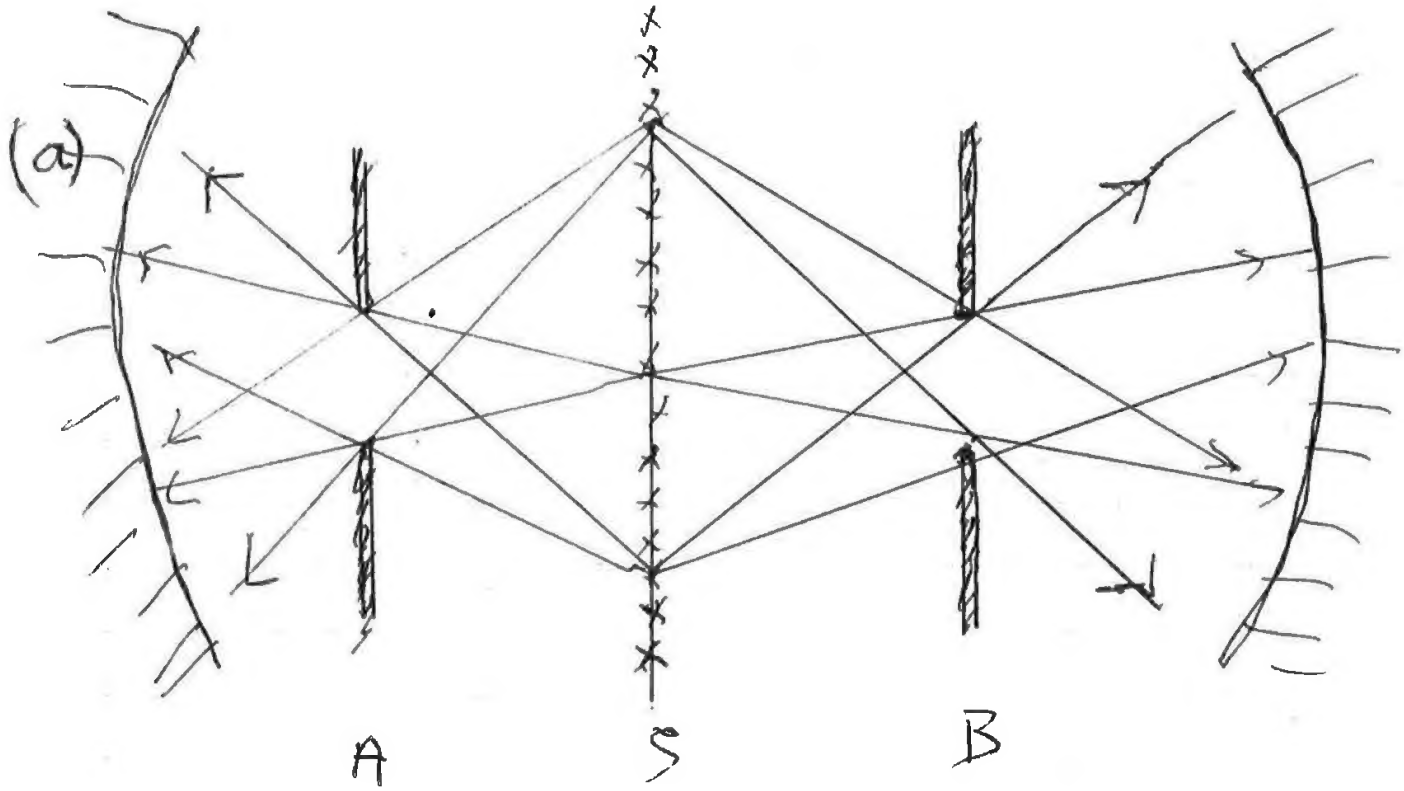

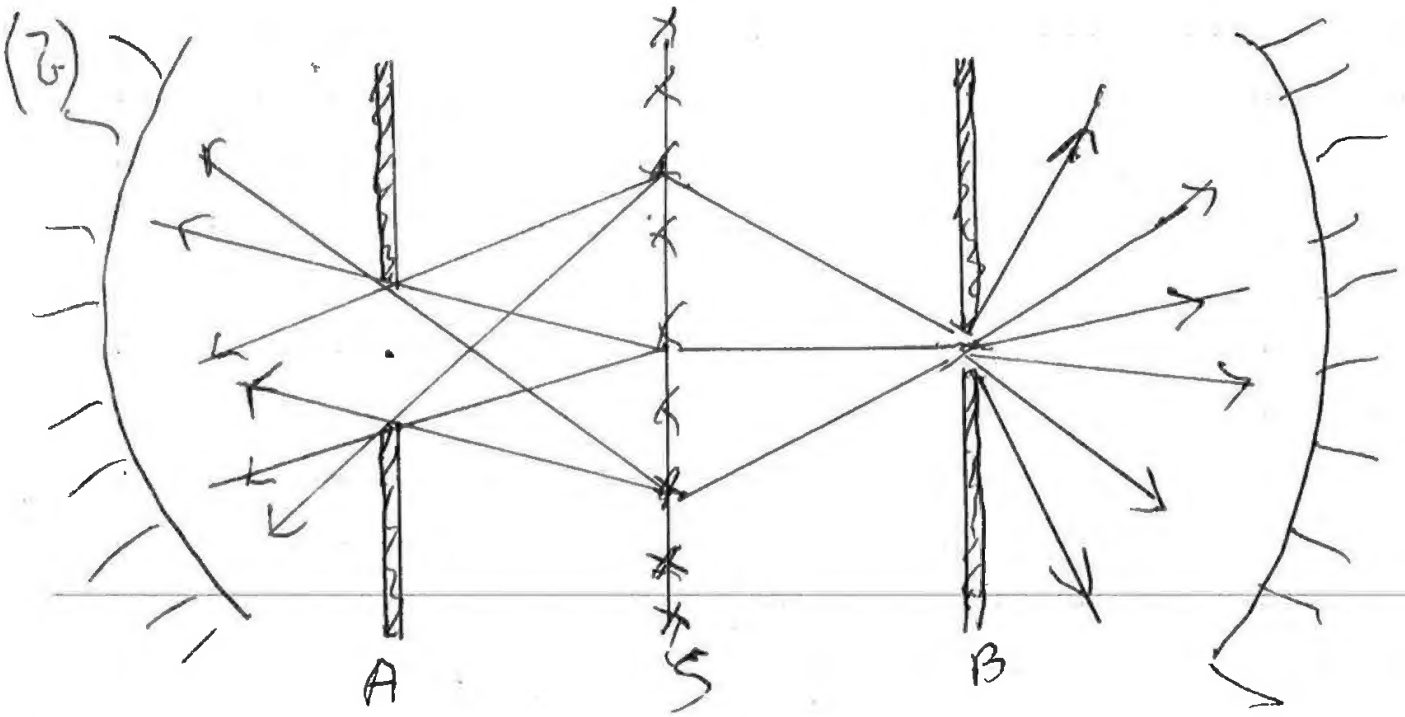

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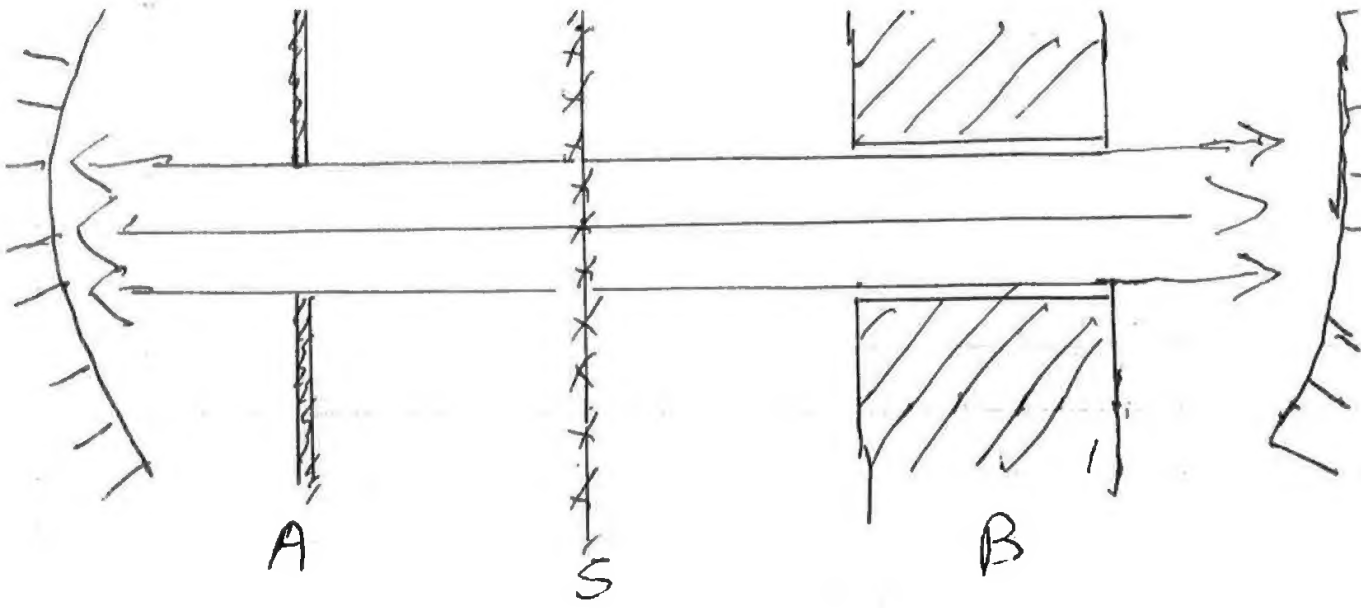

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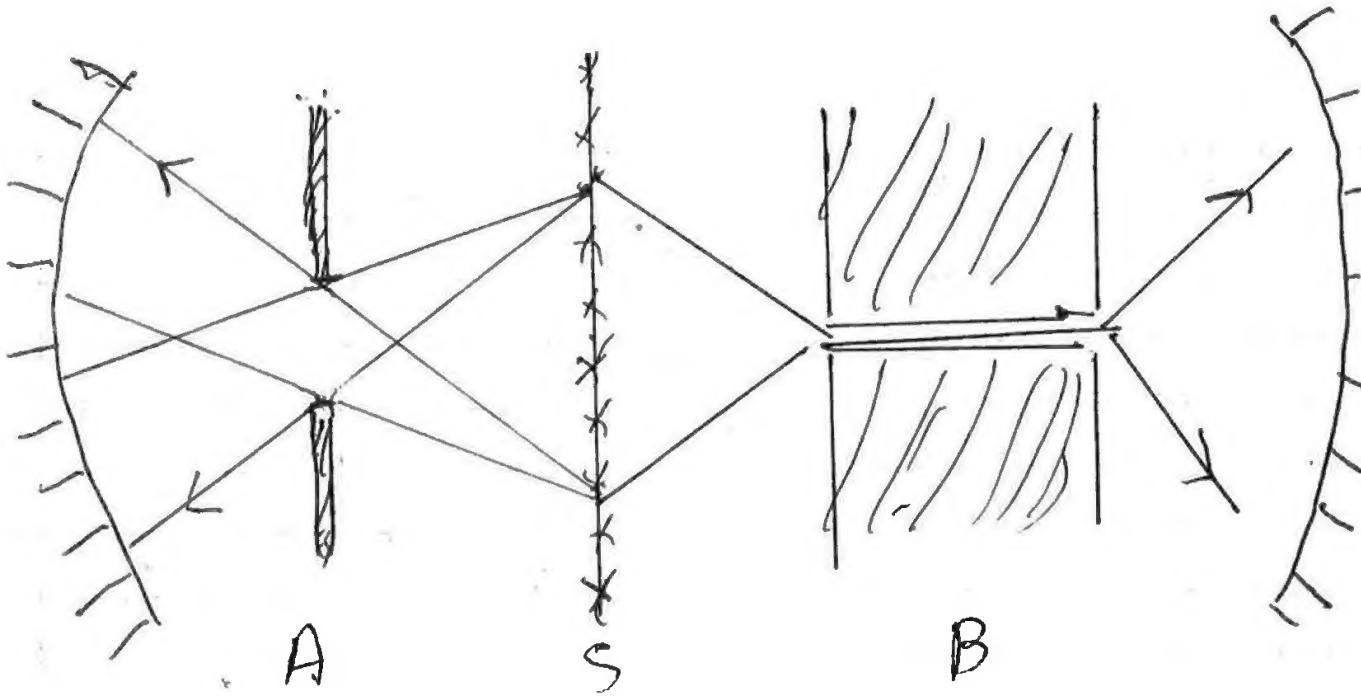
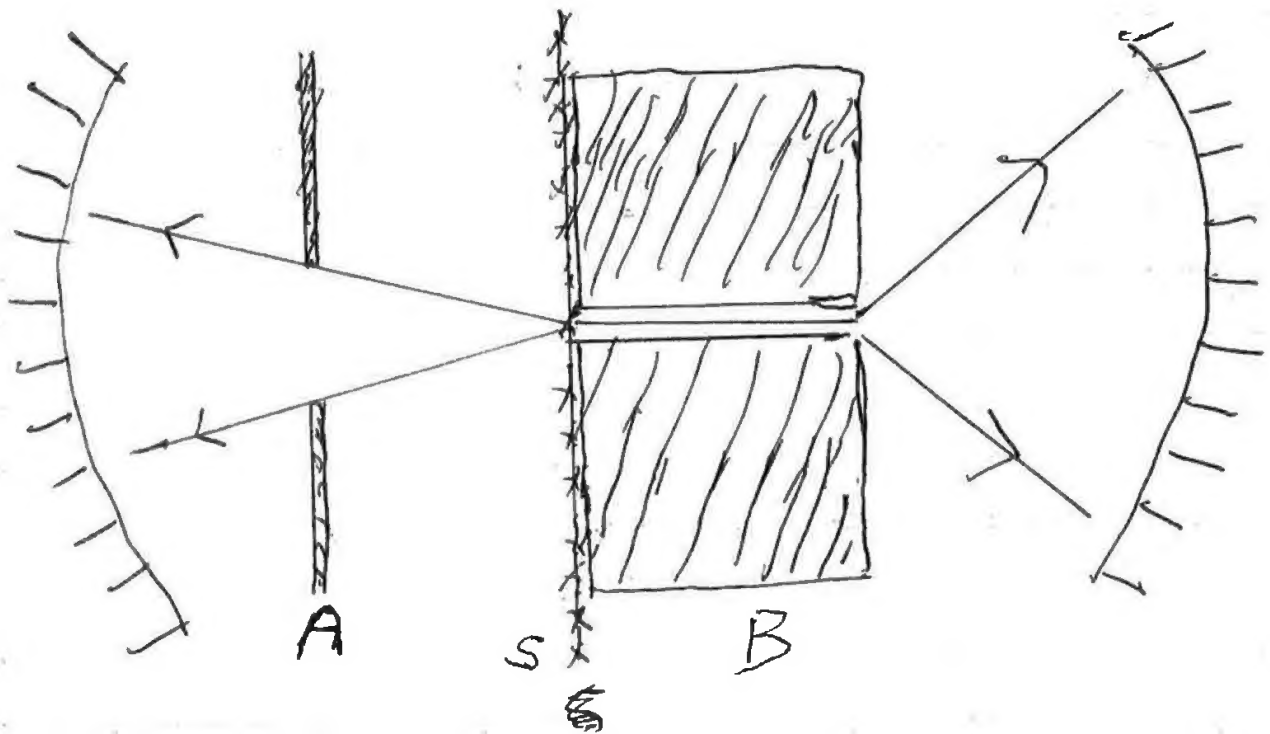
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